

OBESITY DIFFERENCES BETWEEN AFRICAN-AMERICAN MEN AND WOMEN

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The purpose of this study was to examine the socio-demographic and behavioral differences related to obesity between African-American men and women. Obesity was defined as a body mass index of greater than 27.3 kg/m² for women and 27.8 kg/m² for men. Data were collected from 661 African-Americans, 418 women and 243 men, residing in wards 7 and 8 in Washington, DC through telephone interviews. Obesity was prevalent among 38.3% of the women and 20.1% of the men ($p < 0.01$). For women age 55 or older, annual income over \$20K, having less than a high school education, and alcohol and tobacco consumption were associated with being overweight in the initial bivariate analysis ($p < 0.05$). For men, being 35 years or older and unemployment were significant factors associated with obesity. Our final analysis, when known dietary risk factors were adjusted, revealed that in women, obesity was associated with age, hard liquor consumption and non use of tobacco. For men, older age was a primary association. We concluded that gender, with increasing age, plays a significant role in predicting obesity, as defined by concurrent national standards. African American men 55 years of age or older are the most likely group to be overweight even after predisposing and behavioral risk factors are considered. (*J Natl Med Assoc.* 2000;92:22-28.)

Key Words: obesity ♦ behavioral differences
♦ gender

Obesity in the adult population is a significant health problem in the United States due to its association with adverse health outcomes and the resulting excess burden imposed on the health care system.^{1,2} Deleterious effects of obesity include arthritis, diabetes, gout, hypertension, gallbladder disease, and certain malignancies.³ Obesity may alter cardiac, pulmonary, and endocrine functions⁴ and is considered an independent risk factor for cardiovascular disease.^{5,6} Prolonged hospitalization

and overall increase in mortality in the adult population have also been attributed to obesity.⁷

In the 1985 National Health Interview Survey (NHIS), 41% of African-American men and 63% of African-American women age 18 and older reported that they were attempting to lose weight. The sex-age-specific percentages for blacks were lower than those for whites after age 30 (men) or 45 (women). African Americans reported dieting to lose weight at a much lower rate among persons lacking high school education, particularly in the southern part of the United States.⁸ Moreover, little documentation exists in assessing the extent of overweight problems, particularly among African-American men. Typically, African-American men, across different age groups are less likely to be overweight than women, as reported in national studies.⁹ However, it is not clear whether similar risk factors predict obesity between men and women. Besides, there is little documentation of obesity patterns between African-American men and women when so-

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cio-demographic and other behavioral risk factors are considered. Even less attention has been given to differentiating gender patterns of obesity among African Americans with low socio-economic status (SES).

This article examines the relationship between obesity and socio-demographic factors such as age, education, income, marital status, and behavioral factors such as alcohol consumption, smoking and dietary habits between African-American men and women in Wards 7 and 8 of Washington, DC. We hypothesized that there were no SES or behavioral differences related to obesity between African American men and women in our study sample.

METHODS

Subjects

A survey of knowledge, attitudes and practices (KAP) toward health and health behaviors among Ward 7 and 8 residents in Washington, DC was conducted in the summer of 1988. Of the 757 residents interviewed through a random-digit dialing technique, 670 were African American, 54 white, 10 Hispanics and the remaining 23 people of unknown race/ethnicity. The methods used in this study have been described elsewhere.¹⁰ The subjects of interest to the present study were the 661 African Americans (418 women and 243 men). This sample represented approximately 87% of those residents with telephones surveyed in the study.

Several socio-demographic and behavioral variables were included in the analytical framework for examining the factors associated with obesity among African Americans in the selected wards. The socio-demographic variables included age, household income, education, employment and marital status. Whole milk consumption, trimming excess fat from meat products, and consumption of pork, beef, fried foods, and dried peas and beans were dietary factors included in the equations. Among the behavioral variables considered of interest to obesity were types of alcoholic beverage consumption and frequency of tobacco use. Height and weight measurements were included for the computation of body mass index (BMI) using reported weight in kilograms by the square of height expressed in meters (kg/m^2). In the present study, we adopted the computational method used in the 1976-1980 NHANES to determine obesity.¹¹ Women with BMIs greater than $27.3 \text{ kg}/\text{m}^2$ and men with BMIs greater than $27.8 \text{ kg}/\text{m}^2$ were considered

overweight.¹² Additionally, we identified 15.1% of women and 8.6% of men as super obese based on BMI cutoffs greater than $32.3 \text{ kg}/\text{m}^2$ for women and $31.1 \text{ kg}/\text{m}^2$ for men. However, for analytical and comparison purposes, we stratified the BMI into two categories: regular and overweight (OW). Socio-demographic factors included age, income, education, marital status and employment, while smoking tobacco and alcohol consumption were the two behavioral factors considered for gender-related overweight risk assessment.

Statistical Analysis

Cross-tabulations were performed and the Pearson chi-square values of association and their significance levels were obtained for examining the association between OW, socio-demographic and behavioral variables included in the analysis. The chi-square statistics compared the proportion of overweight men or women and their association with identified risk factors. Multivariate analysis of most likely predictors of obesity among the study subjects was also performed for comparing gender differences using logistic regression techniques.^{13,14} For each of the risk factors, respondents were categorized into meaningful subgroups based on the literature. These categories were subsequently entered into the multiple logistic regression models. As our main dependent variable, we used BMI as a binomial category comparing regular weight ($\text{RW} = 0$) with overweight ($\text{OW} = 1$) to identify the odds of OW in the presence of given risk factors. Because of significant gender differences in predicting OW, we subsequently conducted stratified analysis by gender. The same model was used separately for men and women for predicting the outcome variable. Contrasts were selected for each categorical independent variable and categories thought to have the lowest risk of overweight were selected as reference.

RESULTS

Table 1 describes the socio-demographic and behavioral characteristics of the study sample. There were 418 (63.2%) women and 243 (36.8%) men. In the older age groups, women were greater in proportion than men ($P < 0.05$) while in the 18-34 year age group, men (56%) outnumbered women (44.7%). The median age of the total sample was 36 years. In general, there were more men with college educations, higher incomes, and employment. Ta-

Table 1. Sociodemographic and Behavioral Characteristics of Study Subjects

Factor (no.)	Total no. (%)	No. women (%)	No. men (%)
Gender			
Female	418 (63.2)	—	—
Male	243 (36.8)		
Age* (yr)			
18–34	323 (48.9)	187 (44.74)	136 (55.97)
35–54	183 (27.7)	125 (29.90)	58 (23.87)
55 and over	155 (23.4)	106 (25.36)	49 (20.16)
Household Income†			
Less than 20K	108 (16.3)	81 (19.38)	27 (11.11)
20K or more	396 (59.9)	227 (54.31)	169 (69.55)
Unknown	157 (23.8)	110 (26.32)	47 (19.34)
Education*			
Less than High School	114 (17.2)	80 (19.14)	34 (13.99)
High School Graduate	298 (45.1)	189 (45.22)	109 (44.86)
College	209 (31.6)	118 (28.23)	91 (37.45)
Unknown	40 (6.1)	31 (7.42)	9 (3.70)
Employment†			
Employed	376 (43.1)	213 (50.96)	163 (67.08)
Unemployed	285 (56.9)	205 (49.04)	80 (32.92)
Marital status			
Married	224 (33.9)	145 (34.69)	79 (32.51)
Single	437 (66.1)	273 (65.31)	164 (67.49)
Alcohol use†			
None	393 (59.5)	273 (65.31)	120 (49.38)
Hard Liquor	107 (16.2)	59 (14.11)	48 (19.76)
Beer/Wine/Other	161 (24.3)	86 (20.58)	75 (30.86)
Tobacco use†			
No	431 (65.2)	289 (69.14)	142 (58.44)
Yes	230 (34.8)	129 (30.86)	101 (41.56)

* $p < 0.05$.
† $p < 0.01$.

ble 1 also shows that a larger proportion of men than women reported alcohol ($p < .001$) and tobacco ($p < .005$) consumption.

The height, weight and BMI of the total study sample and for men and women are described in Table 2. The mean height for men was 69.7 (s.d. 3.2) inches and 64.2 (s.d. 2.8) for women. The mean BMI was much higher for women 26.6 (s.d. 5.6) compared to 25.2 (s.d. 3.9) for men ($p < 0.01$).

The prevalence of obesity by gender is displayed for each socio-demographics and behavioral factors in Table 3. In both men and women, the following factors were associated with overweight ($p < 0.05$): older age group, higher income, high school education, and no alcohol consumption. Women who did not smoke and men who smoked were more

likely to be overweight than their age-matched counterparts ($p < 0.005$).

The results of gender differences in identifying the risk of overweight in the presence of socio-demographic, behavioral and dietary factors are presented in Table 4. Initially, we performed multiple logistic regression analysis using the total sample to determine the effect of gender on obesity in the presence of identified risk factors. These results indicated that African-American men were less than half as likely to be overweight than women (OR 0.43; 95% CI 0.3–0.6). In the same multivariate model, tobacco consumption provided significant protection from obesity, while older age group categories (age 35–54 years and 55 years and older), demonstrated a twofold and fourfold increased like-

Table 2. Height, Weight and Body Mass Index (BMI) of Survey Respondents

Measures	Total \bar{x} (s.d.)	Men ($\bar{x} \pm$ s.d.)	Women ($\bar{x} \pm$ s.d.)
Mean height (inches)	66.2 (4.0)	69.7 (3.2)*	64.2 (2.8)
Mean weight (pounds)	162.1 (33.7)	173.9 (30.9)*	155.3 (33.4)
Mean BMI (kg/m ²)	26.1 (5.1)	25.2 (3.9)*	26.6 (5.6)

*p < 0.01

likelihood of obesity compared to subjects age 18–34. Subsequently, we stratified the sample by gender and investigated the influence of all the risk factors on obesity for each gender. In both women and men, age was significantly associated with obesity (Table 4) in the multiple logistic regression models ($P < 0.01$). Additionally, in the regression model,

women who consumed hard liquor were twice as likely (OR 2.02, 95% CI 1.1–3.8, $P < 0.05$) to be overweight than those who did not consume any alcohol. Women who smoked were 36% less likely to be overweight (OR 0.36, 95% CI 0.2–0.6, $P < 0.01$) than women who did not smoke tobacco.

For men, on the other hand, the influence of the

Table 3. Sociodemographic and Behavioral Characteristics Associated with Obesity

Factors	Women		Men	
	Reg (%)	OW (%)	Reg (%)	OW (%)
Age*				
18–34	139 (53.88)	48 (30.00)	125 (64.43)	11 (22.45)
35–54	69 (26.74)	56 (35.00)	42 (21.65)	16 (32.65)
55 and over	50 (19.38)	56 (35.00)	27 (13.92)	22 (44.90)
Household Income†				
Less than 20K	42 (16.28)	39 (24.38)	17 (8.76)	10 (20.41)
20K or more	149 (57.75)	78 (48.75)	133 (68.56)	36 (73.47)
Unknown	67 (25.97)	43 (26.87)	44 (22.68)	3 (6.12)
Education*				
Less than High School	41 (15.89)	39 (24.38)	25 (12.89)	9 (18.37)
High School Graduate	126 (48.84)	63 (39.38)	89 (45.88)	20 (40.82)
College	79 (30.62)	39 (24.38)	74 (38.14)	17 (34.69)
Unknown	12 (4.65)	19 (11.88)	6 (3.09)	3 (6.12)
Employment*				
Employed	133 (51.55)	80 (50.00)	138 (71.13)	25 (51.02)
Unemployed	125 (48.45)	80 (50.00)	56 (28.87)	24 (48.98)
Marital Status				
Married	89 (34.50)	56 (35.00)	59 (30.41)	20 (40.82)
Single	169 (65.50)	104 (65.00)	135 (69.59)	29 (59.18)
Alcohol use*				
None	170 (65.89)	103 (64.37)	94 (48.46)	26 (53.06)
Hard Liquor	27 (10.47)	32 (20.00)	37 (19.07)	11 (22.45)
Beer/Wine/Other	61 (23.64)	25 (15.63)	63 (32.47)	12 (24.49)
Tobacco use*				
No	163 (63.18)	126 (78.75)	119 (61.34)	23 (46.94)
Yes	95 (36.82)	34 (21.25)	75 (38.66)	26 (53.06)

*p < 0.01.
†p < 0.05.

Table 4. Adjusted Odds Ratios (OR) for Characteristics Associated with Obesity Among Total Sample

Factors	Total Sample	Women	Men
	Adjusted OR (95% CI)	Adjusted OR (95% CI)	Adjusted OR (95% CI)
Gender			
Females	1.00 (–)	—	—
Males	0.43 (0.30–0.61)†		
Age			
18–34	1.00 (–)	1.00 (–)	1.00 (–)
35–54	2.74 (1.73–4.35)†	2.25 (1.31–3.84)†	5.60 (2.09–15.03)†
55 and over	4.01 (2.36–6.82)†	2.43 (1.34–4.43)†	13.22 (4.16–42.02)†
Household Income			
Less than 20K	1.00 (–)	1.00 (–)	1.00 (–)
20K or more	0.66 (0.39–1.13)	0.56 (0.29–1.07)	0.62 (0.22–1.70)
Unknown	0.48 (0.27–0.85)	0.56 (0.29–2.08)	0.15 (0.03–0.68)*
Education			
Less than High School	1.46 (0.86–2.47)	1.73 (0.93–3.21)	0.51 (0.16–1.64)
High School Graduate	1.0 (–)	1.00 (–)	1.00 (–)
College	0.88 (0.57–1.37)	0.87 (0.51–1.47)	0.46 (0.19–1.08)
Unknown	1.77 (0.81–3.84)	2.48 (1.02–6.06)*	0.65 (0.11–3.84)
Employment			
Employed	1.17 (0.76–1.80)	1.56 (0.93–2.62)	0.82 (0.36–1.89)
Unemployed	1.00 (–)	1.00 (–)	1.00 (–)
Marital Status			
Married	0.75 (0.50–1.11)	0.70 (0.44–1.13)	0.50 (0.22–1.24)
Single	1.00 (–)	1.00 (–)	1.00 (–)
Alcohol Use			
None	1.00 (–)	1.00 (–)	1.00 (–)
Hard Liquor	1.53 (0.92–2.52)	2.04 (1.08–3.84)*	0.90 (0.35–2.29)
Beer/Wine/Other	0.86 (0.53–1.37)	1.06 (0.59–1.91)	0.51 (0.21–1.24)
Tobacco Use			
No	1.00 (–)	1.00 (–)	1.00 (–)
Yes	0.64 (0.42–0.96)*	0.36 (0.21–0.61)†	1.95 (0.92–4.11)

*p < 0.05.

†p < 0.01.

Adjustments were made for using whole milk, foods high in sugar, pork, beef, fried or baked foods, trimming excess fat and consuming peas and beans.

risk factors on obesity were quite different. Education, employment, alcohol and tobacco use did not have any statistically significant influence on obesity when compared with corresponding reference groups and when known dietary risk factors such as consumption of peas and beans, fried foods, meat and foods high in sugar were held constant (Table 4).

DISCUSSION

Our study assessed the prevalence of obesity among urban African-American men and women. Various studies^{9,15–17} have reported obesity among African-American women in relation to a multitude of factors,

but little information is available on the prevalence of obesity among African-American men. The present study compares the prevalence of obesity among African-American women and men in relation to pertinent socio-demographic and behavioral risk factors.

Several limitations of the study have to be considered. The study sample was small, derived from an area in the District of Columbia that has the lowest education, employment and income levels in Washington.¹⁸ The sampling also was limited to the households with a telephone; therefore, the sample may not be representative of all the residents in these wards where approximately 15% of residents

do not own a telephone. In addition, BMI is derived from self-reported height and weight, in which women might tend to underestimate weight and men overestimate height.^{19–21} However, recent studies have reported a high accuracy of BMI measurements with self-reported data,²² including a validation study to compare self-reported and measured height and weight.²³

As described in earlier reports,²⁴ prevalence of obesity is higher among women compared to men for all ages combined, 38.3% of the women and 20.1% of the men in the current study were overweight. Data from Behavioral Risk Factor Surveillance System (BRFSS), 1985–1988 indicate that 35.8% of women and 23% of men are overweight.²⁵ It is reasonable to compare BRFSS with our results, since both data were collected at similar times. Overall, our results indicate that the risk of obesity among African-American women may differ from that for African-American men in these precincts, thus requiring us to conduct stratified analysis. Unlike the women, where there is a twofold risk of obesity among those 35 years or older, older men, particularly those 55 years and older, have 13 times greater risk of being overweight than men age 18–34. These findings suggest that targeted interventions such as comprehensive cardiovascular fitness programs be aimed at this subgroup. Due to the cross-sectional nature of our data, our study did not tease out the relative contribution of aging toward the risk of obesity among these men.

According to data from the National Health and Nutrition Examination Survey III (NHANES III) phase I, data collected from 1988 to 1991, 33.4% of U.S. adults age 20–74 years were overweight, BMI ≥ 27.8 for men and ≥ 27.3 for women. The prevalence of obesity is higher among African Americans than among non-Hispanic whites.²⁶ There are differential patterns between the races by gender. While non-Hispanic white men have a higher prevalence of obesity than African-American men, 32.1% versus 30.9%, the opposite is true for women. Nearly half (48.7%) of African-American women are overweight compared with 34% of non-Hispanic white women. Except for African-American men 20–29 years of age, who have a higher percentage of obesity, the same differential patterns prevail across all ages for both men and women of both races. When comparing the prevalence of obesity by race and gender from 1960 First National Health Examination Survey (NHES I) to 1991 (NHANES III),

African-American women were more likely to be overweight at each time period, but African-American men had a slightly lower percent in 1960–1962 (NHES) and 1988–1991 (NHANES III). There was a consistent secular trend upward for both sexes and races over the 30-year period.²⁷

Consistent with previous studies, women who did not smoke and men who smoked were overweight in the present study. Most studies show that individuals who smoke cigarettes are relatively thinner when compared to age-matched nonsmokers.²⁸ Additionally, our finding of negative correlation with BMI and smoking among women has also been reported in studies elsewhere.^{29,30} On the other hand, men in our study, who reported smoking carried almost a twofold risk of being overweight, although this risk was not statistically significant.

Obesity, especially among African-American women, may be associated with poverty, lower educational attainment and other lifestyle behaviors.^{24,31} In addition, African-American women are less likely than white women to perceive themselves as being overweight when categorized by actual weight relative to ideal weight.¹⁵ A 30-lb difference in weight and a larger difference in fatness is usual when comparing poverty-level and above median income groups of women in their middle years. Data from NHANES I have also shown that obesity was inversely related to family income and education in African-American and white women, with the relationship to educational level in African-American women having the strongest correlation.⁹ Among men, as evidenced from our study, the risk of overweight may be a function of age, where they tend to lead sedentary lifestyles after retirement from active life at an earlier age.

CONCLUSION

Our study highlights the need for targeted programs to reduce overweight problems among African-American women and men. Prevalence of obesity is higher among our study subjects compared to the general population. Given the significant difference in socio-demographic and behavioral characteristics based on gender, we recommend a holistic approach in addressing predisposing and lifestyle factors of weight reduction among African-American women and men separately. The trend among men of a rapid increase in risk of obesity according to age necessitates more targeted interventions for men at different age groups than for women at same

age. At the same time, it is important to incorporate cultural considerations in designing and implementing interventions. Further investigation would assist in understanding the key antecedents which predict obesity at different ages for men compared to women. In view of difficulties involved in weight reduction, primary prevention of obesity may be an optimal choice.

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